

Remarks

Applicants have cancelled Claims 17 and 18. Applicants have amended Claim 19. Applicants respectfully submit no new matter has been added by the present amendment. Support for the amendment can be found generally throughout the text, specifically at page 10, line 17 through page 11, line 12.

Claim Rejection under 35 U.S.C. § 102(b) or in the alternative § 103(a)

Claims 17-20, 23 and 24 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over Surowiec et al. (U.S. Patent No. 5,804,606). Applicants respectfully traverse this rejection.

Applicants submit to anticipate a claim, the cited references must teach each and every element of the claimed invention, either explicitly or inherently. Applicants submit the present invention is directed to a process for removing heavy metals or noble metals from aqueous solutions, from saline solutions from alkali metal chloride electrolysis, from aqueous hydrochloric acid, from waste water or flue gas scrubber effluent, from ground water or landfill eluate, from liquid or gaseous hydrocarbons, carboxylic acids, or from halogenated hydrocarbons comprising contacting the aqueous solution, etc. with an ion exchanger having chelating functional groups, wherein the ion exchanger is prepared as disclosed in Claim 1.

Applicants submit Surowiec et al. does not teach each and every element of the claimed Invention. Surowiec et al. discloses a macroporous, aminoalkylphosphonic or iminodiacetic acid chelating resins having improved stability and capacity in the removals of cations (such as calcium, magnesium, etc) from brines and the removal of metals (such as nickel, cooper and zinc) from waste streams. Surowiec et al. discloses the method for preparing macroporous, chelating ion exchange resins which comprises suspension polymerizing a monomer mixture of 86 to 94 percent by weight of a monovinyl aromatic monomer, 4 to 8 percent by weight of divinyl aromatic monomer and 2 to 6 percent by weight of a crosslinker monomer wherein the polymerization is carried out in the presence of a phase extender and

functionalizing the resulting copolymer with aminoalkylphosphonic or iminodiacetic acid groups.

According to Suroweic et al., the chelating resin used in the removal of the cations and metals is prepared by the so-called "chloromethylation-way." See Example 2 in Column 4, line 54 which discloses an acid resin produced from the chloromethylations, amination, hydrolysis and methylphosphonation of a macroporous copolymers produced by the polymerization of styrene, DVB and TMPTMA in the presence of MIBC and Example 3 in Column 5, line 49 which discloses an acid resin produced by chloromethylating then aminating, hydrolyzing and reacting with chloroacetic acid a copolymer produced by the polymerization of styrene, DVB, TMPTMA in the presence of MIBC. Whereas the ion exchanger used in the process according to the present invention (i.e. a process for removing heavy metals or noble metals from aqueous solutions, from saline solutions from alkali metal chloride electrolysis, from aqueous hydrochloric acid, from waste water or flue gas scrubber effluent, from ground water or landfill eluate, from liquid or gaseous hydrocarbons, carboxylic acids, or from halogenated hydrocarbons) is prepared via the so called "phthalimide-way" see step (b) of Claim 19.

Applicants submit Suroweic et al. fails to teach each and every element of the claimed invention, namely a process for removing heavy metals, etc. from streams with an ion exchange resins prepared as in Claim 19, i.e. amidomethylating the monodisperse, crosslinked bead polymer from step (a) with phthalimide derivatives. Therefore, Applicants submit the Suroweic et al. fails to teach each and every element of the claimed invention and accordingly Applicants request withdrawal of this ground of rejection.

Applicants further submit that Suroweic et al. fails to render the present invention obvious. Applicants also respectfully submit that "in order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claims limitations. The teachings or suggestions to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure." See MPEP § 2142, citing In re Vaeck, 947 F.2d 488, 20 USPQ 2d. 1438 (Fed. Cir. 1991).

As discussed above Suroweic et al. discloses manufacturing monodisperse ion exchangers by the so called "chloromethylation way", not as claimed in the present invention. Applicants further submit the Declarations of Inventor Klipper (Appendix A) and Inventor Hees (Appendix B) under 37 CFR 1.132. As illustrated in new Example 2 of Dr. Klipper's Declaration, macroporous, monodisperse chelating ion exchanges resins prepared according to the phthalimide process of the present invention when compared to Example 2 of Suroweic et al (See Table 1 in Suroweic et al.) reach a total capacity of 3.3348 ml/l as opposed to 1.5 meq/ml. Accordingly, Applicants submit this Declaration, along with the disclosure in the Specification, clearly supports that the monodisperse resins prepared and used as claimed in the present have better volumes capacities than the resins according to Suroweic et al.. In addition, Applicants submit the Declaration of Dr. Hees further illustrates that monodisperse resins according to the present invention when compared to heterodisperse resins according to Suroweic et al. also have higher total capacities.

Accordingly, Applicants submit the macroporous chelating resins having improved stability and capacity in the removal of cations from brines and in the removal of metals from waste streams as disclosed in Suroweic et al. fails to render a process for removing heavy metals or noble metals from aqueous solutions, from saline solutions from alkali metal chloride electrolysis, from aqueous hydrochloric acid, from waste water or flue gas scrubber effluent, from ground water or landfill eluate, from liquid or gaseous hydrocarbons, carboxylic acids, or from halogenated hydrocarbons comprising: contacting the aqueous solution, the saline solution, the

aqueous hydrochloric acid, the waste water or flue gas effluent, the ground water or landfill eluate, the liquid or gaseous hydrocarbon, the carboxylic acid, or the halogenated hydrocarbon with an ion exchanger having chelating functional groups, wherein the ion exchanger is prepared by (a) reacting monomer droplets made from at least one monovinylaromatic compound and at least one polyvinylaromatic compound to give a monodisperse, crosslinked bead polymer, (b) amidomethylating the monodisperse, crosslinked bead polymer from step (a) with phthalimide derivatives, (c) converting the amidomethylated bead polymer from step (b) to an aminomethylated bead polymer, and (d) converting the aminomethylated bead polymer from step (c) to ion exchangers having chelating groups, obvious.

Respectfully submitted,

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